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Automatic Processing of Dominance and Submissiveness

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Abstract

We investigated whether people are able to detect in a relatively automatic manner the dominant or submissive status of persons engaged in social interactions. Using a variant of the affective Simon task (De Houwer & Eelen, 1998), we demonstrated that the verbal response DOMINANT or SUBMISSIVE was facilitated when it had to be made to a target person that was respectively dominant or submissive. These results provide new information about the automatic nature of appraisals and about interpersonal perception.

Key Words

appraisal, antecedent, emotion, coping potential, dominant, submissive, status, automaticity, Simon task

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Appraisal theories of emotion assume that emotions are determined by the appraisal of events rather than by the objective characteristics of those events. Most appraisal theories assume different antecedent steps or components of appraisal that each deal with a different aspect of the encounter. These components include goal relevance, intrinsic valence, motivational valence (also called goal conduciveness, Scherer, 1988, or goal congruence/incongruence, Lazarus, 1991), coping potential, agency/accountability, future expectancy, and norm/self compatibility. Appraisal theories also assume that different specific emotions (happiness, anger, fear, sadness) are the result of different combinations of outcomes of these components. Although there is no perfect agreement among appraisal theories about the exact number and nature of the appraisal components postulated, there is ample consensus about the importance of the components of goal relevance, motivational valence and coping potential. The component of goal relevance serves to distinguish between emotional and non-emotional events. The component of valence determines whether the resulting emotion will be positive or negative. Often a distinction is made between the valence of a stimulus in isolation (i.e., intrinsic valence) and the valence of a stimulus as determined by the extent to which it facilitates or hinders the person's goals or concerns (i.e., motivational valence). Finally, the appraisal of (event-focused) coping potential refers to the extent to which a person is capable of undoing the negative consequences of an event. Other terms used are controllability (Frijda, 1986) and power (Roseman, 1984). According to a number of appraisal theories, the component of coping potential helps to differentiate between the negative emotions that oppose to stimuli and negative emotions that accommodate to them (Roseman, Antoniou, & Jose, 1996). For example, coping potential is assumed to be high in anger and disgust, but low in fear and sadness (Scherer, 1988; Lazarus, 1991, 2001). Coping potential has also been proposed as a determinant of the intensity of negative emotions.

Negative events that are appraised as easy to cope with, will result in less intense negative emotions than negative events that are appraised as more difficult to cope with (Lazarus, 1991).

In order to accommodate the fact that specific emotions can arise spontaneously, several theorists have suggested that emotion-antecedent appraisal components can be determined and integrated automatically. Indeed, if one assumes, for example, (a) that the components of goal relevance, motivational valence and coping potential are central antecedents of anger and fear, and (b) that anger and fear can be elicited in an automatic fashion, then one must assume that goal relevance, motivational valence and coping potential can be appraised in an automatic fashion as well. At present, there is evidence for the possibility of the automatic processing of goal relevance, intrinsic valence, and motivational valence. Attentional bias paradigms such as modified Stroop tasks or dot probe tasks show selective attention to goal-relevant compared to neutral stimuli (e.g., Williams, Mathews, & MacLeod, 1996), thus supporting the idea that goal relevance can be detected in an automatic fashion. Previous affective priming and Simon research provide support for the possibility of the automatic appraisal of intrinsic stimulus valence (Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Hermans, De Houwer, & Eelen, 1994; De Houwer & Eelen, 1998) and motivational valence (Moors & De Houwer, 2001; Moors, De Houwer, & Eelen, 2004, Moors, De Houwer, Hermans, & Eelen, in press). These findings suggest that at least the raw positive or negative quality of emotions can be determined in an automatic fashion. As a next step, we want to examine whether information that adds to the further differentiation of emotions, such as information related to the component of coping potential, can be processed in an automatic fashion as well.

Coping potential is considered to be inherently transactional (Scherer, 1988). This means that a person's potential or power must be considered relative to the demands imposed

by the situation. For example, in order to know whether one can cope with a financial loss, one must not only determine that one is rich, but also whether one is rich enough to overcome the crisis. Likewise, in order to determine whether one can cope with an adversary, one should not only consider one's own capacity, but also the capacity of the adversary. In other words, one should be able to determine whether one is in a dominant or a submissive position with regard to other. The purpose of the present study was to examine whether people are able to automatically pick up information about dominance or submissiveness in the environment. More precisely, we tested the hypothesis that observers can determine in a relatively automatic manner whether one of two persons involved in a social interaction has either a dominant or submissive status relative to the other person. Our research can be framed as a first step to investigating the automatic nature of the appraisal of coping potential. However, it has at least two restrictions. First, we do not investigate the automaticity of the appraisal of coping potential itself, but rather of information that may contribute to such an appraisal. Second, the relevance of dominance information for an appraisal of coping potential may be restricted to certain interpersonal contexts. There are numerous other, non-social situations in which an appraisal of coping potential is not dependent on dominance information. For example, to assess whether one can cope with a bad disease depends on information about one's immune system, or on the availability of medication. On closer consideration, however, even in non-social examples, coping may be said to depend on dominance in a metaphorical sense. To be able to cope with a disease or a natural disaster implies that one dominates the situation. Therefore, we think that an assessment of dominance information is not just a marginal factor contributing to an appraisal of coping potential.

Besides its significance for emotions, an automatic and accurate assessment of one's relative status in terms of dominance or submissiveness is important for ensuring effective social interaction. People who are better at interpreting signals about their status will be more

successful in social interactions because they are able to tune their behaviour to the constraints that are imposed by this information yet still manage to achieve their own goals. For example, a boxer who accurately categorizes his opponent as physically more powerful can adopt a defensive rather than an attacking strategy in order to tire out his opponent and eventually win the competition. In addition to accuracy, it may also be adaptive for people to assess these interpersonal configurations of dominance and submissiveness in an automatic sense. Assuming that in a social interaction, a person not always has time and attentional resources to focus on his/her relative status, it would be convenient for the person to be able to automatically process this status. For example, being engaged in all kinds of complex movements, a boxer may not have much time and attentional resources left to engage in a deliberate analysis of his quickly changing status. Nevertheless, it would be useful for the boxer to be able to process his status under these circumstances. Although in the literature on social and interpersonal perception, it is often assumed that observers are able to automatically decode characteristics of interpersonal relations such as who is dominant or submissive, research efforts have been directed at testing the accuracy rather than at the automaticity of such decodings (Ambady & Rosenthal, 1992).

Research supporting the possibility of an automatic assessment of dominance information is limited to studies in which the focus of interest was not the automatic nature of the assessment of dominance information per se but rather the influence of dominance information on subsequent processing and behaviour. Bargh, Raymond, and Pryor (1995) set out to show that men who are likely to sexually aggress or harass have an association in memory between the concepts of power and sex and that activation automatically spreads from the former to the latter. One of the findings was that subliminal priming of power-related words facilitated responses to sex-related words. Although not in the focus of the author's interest, this finding also shows that the dominance or power connotation of words can be

processed automatically, at least in the sense of based on unconscious input. The study of Bargh et al. (1995) does not, however, inform us about the ability to automatically detect dominance in real life scenes of social interactions. The dominance relation between two people is usually not immediately given (there are no labels stating which person is the dominant and which person is the submissive one), but may be revealed through non-verbal cues such as physical size, and posture (Tiedens & Fragale, 2003), as well as verbal cues and other symbols (e.g., uniforms). What is true for the semantic activation of words may not necessarily be true for the extraction of dominance information from other cues in complex pictures of social interactions. It can be argued that the ability to automatically detect the dominance or submissiveness in scenes of people that are interacting is more relevant for the elicitation of emotions and for social interactions than is the ability to detect the dominance connotation expressed in words.

In another type of studies, Tiedens and Fragale (2003) showed that participants who interacted with a confederate adopted a posture (expansion vs. constriction) that was complementary to the posture of the confederate (constriction vs. expansion), and that they were not aware of being influenced in this way. These data were interpreted as speaking to the idea that observers respond to submissive and dominant behaviour with contrasting behaviour and that they do so in an automatic way. The data seem to suggest that the status of the confederate was initially processed in an automatic way as well. However, although the experimenters interpreted the postures of expansion and constriction as expressing dominance and submissiveness, one cannot be entirely confident that participants spontaneously did so as well, nor is it clear to what extent the initial processing of dominance or submissiveness of the confederate was automatic.

The purpose of our study was to test more directly whether the status of one person relative to another person can be automatically assessed. Before turning to the details of the

experiment, it should be noted that we did not focus on the feature unconscious, as Bargh et al. (1995), and Tiedens and Fragale (2003) did, but rather on other features of automaticity such as unintentional, efficient and fast (e.g., Bargh, 1992). One could argue that in the context of emotions and interpersonal behaviour, to know whether people can assess dominance information under conditions of little time and attention, and when they have no conscious intention to do so, is a more ecologically valid question than to know whether they can assess this information in the absence of unconscious input (Bargh & Barndollar, 1996).

In our study we developed a variant of the affective Simon task (De Houwer & Eelen, 1998). On one type of trials, photographs were shown that depicted scenes of two interacting individuals (Person A and Person B). On each photograph, one person was dominant whereas the other was submissive (e.g., an army officer shouting at a soldier). On half of all pictures, Person A was dominant, on the other half, Person B was dominant. On half of the pictures on which one person (A or B) was dominant, this person was positioned on the left side; on the other half, this person was positioned on the right side. Participants were instructed to respond on the basis of the spatial position (right/left) of one of both persons. There were four response conditions. Participants in the first and the second response condition were instructed to focus exclusively on Person A, whereas participants in the third and fourth response condition were asked to focus exclusively on person B. Participants in the first response condition had to say aloud DOMINANT when Person A was positioned right, and SUBMISSIVE when Person A was positioned left. Participants in the second response condition received the reversed allocation of responses to spatial positions of Person A. Participants in the third response condition had to say DOMINANT when Person B was positioned right, and SUBMISSIVE when Person B was positioned left. For participants in the fourth response condition, the allocation of responses to spatial positions of person B was reversed. On another type of trials, words expressing dominance (e.g., ambitious) or

submissiveness (e.g., helpless) were presented and participants were instructed to say aloud DOMINANT to dominant words and SUBMISSIVE to submissive words as fast as possible. These word trials were included to reinforce the association between the concept "dominant" and the verbal response DOMINANT and between the concept "submissive" and the verbal response SUBMISSIVE (see Voss, Rothermund, & Wentura, 2003, for a similar approach). Picture and word trials were presented intermixed and participants were asked to respond as quickly and as accurately as possible on both types of trials.

We predicted that performance would be superior on trials on which the participants had to say DOMINANT to pictures in which the target person was dominant and on trials on which they had to say SUBMISSIVE to pictures in which the target person was submissive, even though participants were instructed to focus and respond as quickly as possible to the spatial position of the target person and not to his status.

Method

Participants.

Forty psychology undergraduates (3 men, 37 women) at Ghent University participated in exchange for course credits. All were native Dutch speakers.

Materials.

For the practice trials, we used eight dominant and eight submissive words. For the experimental trials, we used eight other dominant and eight other submissive words. (see Appendix). The letters were about 8 mm high and 6 mm wide. The scenes for the picture trials were set up and photographed by the first author. On the basis of a pilot study, we selected those pictures that were evaluated as being most clear with regard to which of both actors was dominant and which was submissive. In total, three different scenes served as the basis for the pictures in the practice trials and eight other scenes were used in the experimental trials (see Appendix for a description of all scenes). Each scene led to the construction of four pictures.

In a first picture, Person A was dominant and positioned right. A second picture was identical to the first picture, except that the image was mirrored, so that Person A was now positioned left. In a third picture, person A and B switched clothes and roles, so that person B was now dominant and positioned right, but other elements remained the same. In a fourth picture, the image of the third picture was mirrored so that Person B was now positioned left. As a result, for the practice trials, there were six pictures in which Person A was dominant and six pictures in which Person B was dominant. For the experimental trials, there were 16 pictures in which Person A was dominant and 16 pictures in which person B was dominant. On half of all pictures in which Person A was dominant, Person A was positioned right; on the other half, Person A was positioned left. On half of all pictures in which Person B was dominant, Person B was positioned right; on the other half, Person B was positioned left. The picture stimuli were about 19 cm high and 28 cm wide. All stimuli were presented on a 100 Hz SVGA 19" screen connected to a Pentium IV 2.8 Ghz computer. Stimulus presentation as well as the registration of the response latencies were controlled by an Affect 3.0 program developed with C++ for the Windows platform (Hermans, Clarysse, Baeyens, & Spruyt, 2001). The verbal responses were registered by a voice key that was connected to the parallel port of the computer.

Procedure.

Participants were tested individually. After they filled in an informed consent, the experimenter explained that they would receive two types of trials: word trials and picture trials. During the word trials, participants had to say aloud DOMINANT to dominant words and SUBMISSIVE to submissive words as quickly as possible[1]. The experimenter first demonstrated how to respond on two word trials, one in which the dominant word COMPELLING was shown and one in which the submissive word PLIABLE was presented. Next, it was explained that during the picture trials, pictures would be presented in which two

persons (A and B, both men) would always be featuring. In order to introduce these persons to the participants, four photographs were shown on the computer screen: one side view and one frontal view of Person A, and one side view and one frontal view of Person B. Participants in Response Conditions 1 and 2 were asked to focus on Person A during the entire experiment; participants in Response Conditions 3 and 4 were asked to focus on Person B. Participants in Response Conditions 1 and 3 had to say DOMINANT when the target person was positioned right and SUBMISSIVE when he was positioned left. Participants in Response Conditions 2 and 4 had to say DOMINANT when the target person was positioned left and SUBMISSIVE when he was positioned right. The experimenter then demonstrated how to respond on two picture trials: one trial in which the target person was positioned left and another in which the target person was positioned right. Next, the participants completed 20 practice trials in which eight word trials and twelve picture trials were presented intermixed. Each of the eight practice words was presented once and so was each of the twelve practice pictures. After this, the participants received 2 blocks of 48 experimental trials. In each block, 16 word trials (all experimental words once) and 32 picture trials (all experimental pictures once) were presented intermixed. In all practice and experimental blocks, stimuli were presented in random order.

Each practice and experimental trial consisted of the presentation of a word or a picture, which remained on screen until a response was registered or 3500 ms elapsed. After the response was given, the experimenter pressed a code indicating which kind of response the participant had given (DOMINANT or SUBMISSIVE), or a separate key for voice key failures. When the response was incorrect, the word “error” was displayed during 2500 ms following the experimenter’s keypress. The inter-trial interval varied randomly between 1000 and 1500 ms. As dependent variables, we measured the response times (i.e., time between the

onset of the picture and the response) as well as the number of incorrect responses on the picture trials only.

Results

Practice trials, word trials, trials on which reaction times were shorter than 150 ms or longer than 1500 ms (3.40%), and trials on which the experimenter noticed problems with the voice key (2.50%) were excluded from all analyses. For each participant, mean reaction times as well as percentages of errors were calculated. Trials on which an incorrect response was given (11.30%) were also excluded from the calculation of the mean reaction times. ANOVAs were conducted on the mean reaction times and percentages of errors separately, using status of the target person (dominant vs. submissive) and status expressed by the to-be-given response (dominant vs. submissive) as within-subjects variables.

The ANOVA of the mean reaction times revealed a significant interaction between the two variables, $F(1,39) = 31.94$, $MSe = 2072.91$, $p < 0.01$. Reaction times were shorter on trials on which the target person and the response had the same status connotation compared to trials on which both elements had a different status connotation (see Table 2). The ANOVA of the percentages of errors also revealed a significant interaction, $F(1,39) = 17.78$, $MSe = 0.00$, $p < 0.01$, with less errors on trials on which the target person and the correct response had the same status connotation compared to trials on which both elements had a different status connotation (see Table 1). No other effect reached significance, $Fs < 1$.

Discussion

The results showed a Simon effect for both the reaction time data and the error data. These results demonstrate that participants were able to process the dominance or submissiveness of the target person in relation to another person under the conditions created in the experiment. These conditions were such that the relative status of the target person needed to be processed quickly, unintentionally, and relatively efficiently in order to have an

effect on performance (Bargh, 1992; De Houwer & Eelen, 1998). The fact that participants responded as quickly as possible to the spatial position of the target person indicates that there was little time to process the status of the target person. The fact that participants processed the relative status of the target person despite the fact that they were instructed to focus on the spatial position of the target person lends support for the idea that participants processed this information without the conscious intention to do so. Finally, to the extent that processing and responding to the spatial position of the target person depleted a certain amount of attentional resources, processing of the relative status of the target person can be called efficient.

In many interpersonal contexts, people need to be sensitive to information about dominance and submissiveness in order to behave in an appropriate manner and in order to appraise their coping potential should a negative event occur. Our findings show that information about dominance can be processed automatically, in the sense of fast, unintentional and relatively efficient, and thus are in line with the hypothesis that coping potential can be appraised automatically as well. Our findings are especially relevant for theories that (a) assign a pivotal role to coping potential in the elicitation and differentiation of specific negative emotions (Roseman et al., 1996) and (b) assume that specific emotions can be elicited in an automatic manner.

It is not our aim to make claims about the status of the appraisal component of coping potential as a necessary or sufficient antecedent for certain emotions such as anger and fear. We are aware that some theories do not consider coping potential as a *necessary* condition for the elicitation of anger. For example, some authors suggest that anger can be elicited by sheer goal incongruence (e.g., Berkowitz, 1999). Others assume that a combination of the components of goal congruence, goal conduciveness and coping potential is not *sufficient* for the elicitation of anger. They assert that an additional appraisal of agency or accountability is required or even that agency or accountability are more central to anger than coping potential

(e.g., Lazarus, 1991). However, given the fact that many consider the appraisal component of coping potential as a *typical* antecedent of fear and anger, it is important to verify whether this component or elements that are central to it can be processed under circumstances that leave little time and opportunity for a deliberate processing of this aspect of the encounter.

Not only is there no perfect agreement among the subscribers of an appraisal view about which appraisal components are necessary and sufficient conditions for certain specific emotions to occur, there is also no perfect agreement about which appraisal components can be assessed in an automatic sense and where reflection comes in. Traditionally, appraisal theorists have accepted Lazarus' (1991) distinction between primary and secondary appraisal. Primary appraisal includes the components of goal relevance, goal congruence/incongruence, and type of concern or ego-involvement. Secondary appraisal includes coping potential as well as other components such as accountability and future expectancy. Primary appraisal is generally supposed to be responsible for the raw positive or negative quality of the ensuing emotion, whereas secondary appraisal serves to further differentiate positive and negative emotions into more specific ones such as anger, fear, sadness, shame, pride, and guilt. A number of theorists have considered the distinction between primary and secondary appraisal as being parallel to the distinction between automatic and non-automatic processing (e.g., Lambie & Marcel, 2002), much unlike several other theorists (e.g., Frijda & Zeelenberg, 2001; Lazarus, 2001). The latter theorists assume that both primary appraisal and secondary appraisal may take place in an instant and even when people do not have the explicit purpose to analyse the situation. Traditionally, appraisal theorists have fought out disagreements about process issues with rational arguments and intuitive examples. The experimental methods that we have used in the present experiments, however, allow us to go beyond sheer speculation. The present study is more consistent with theories that assume that secondary appraisal can

take place in an automatic sense than with those that assume that secondary appraisal is always a matter of deliberate analysis of the implications of the situation.

In addition to the domain of emotions, the present results are also relevant for the domain of social and interpersonal perception. Many studies within this field have examined the accuracy of judgments of interpersonally relevant personality traits that are based on short observations of expressive behaviour (Ambady & Rosenthal, 1992). A widespread, yet untested assumption in this field is that observers are able to decode the cues through which these traits are communicated in an automatic sense. The present study yields support for the automatic assessment of at least one interpersonally relevant trait dimension, that of dominance versus submissiveness.

Although we believe that the present findings support the idea that the dominance relation between two people can be appraised in an automatic sense, some nuance is in place. First, it is important to stress that we believe that automaticity is best broken down into different features, such as fast, unintentional, uncontrollable, efficient, and unconscious (also see Bargh, 1992). Second, we hold a relative or gradual conception of automaticity. Our approach to automaticity can be called relative in two ways (cf. Moors & De Houwer, 2004). First, a number of features is inherently relative. For example, when a process is said to be fast, it means that little time is needed, not that no time is needed. The same goes for the feature efficient. It makes perfect sense to conclude that the process under consideration makes only little use of attentional resources in order to operate. Moreover, conclusions of absolute efficiency remain practically unattainable. Because it is impossible to determine whether the task that must be performed by the participants (responding to the spatial position of the target person) exhausts all available attentional resources, it can never be shown that the processing of dominance is entirely independent of these resources. Therefore, conclusions of efficiency can only be conclusions of relative efficiency. This brings us to the

second sense in which our approach to automaticity can be called relative. Although in theory, it should be possible to investigate whether a particular process can take place in the complete absence of attentional resources, (conscious) intentions, or awareness (of the eliciting conditions or the process itself) and whether (conscious) control is possible over the course of the process, available research methods seldom allow for conclusive arguments. However, this should not withhold us from reporting these arguments. As long as the limitations of the arguments are made explicit, arguments in favour or against automaticity features are valuable, even when they are not, and can perhaps never be, conclusive. For example, although consciously intentional processing of the dominance-submissiveness dimension was strongly discouraged in the present experiment, it was not actually prevented. Therefore, we cannot be entirely sure that no conscious intentions were involved in the generation of the Simon effects that we obtained. Even so, we believe that the fact that participants were instructed to focus and respond to other dimensions of the presented stimuli, is a legitimate argument in favour of the idea that the dominant-submissive dimension can be processed without the conscious intention to do so. In sum, our results do support the claim that dominance and submissiveness can be processed in a relatively automatic manner.

References

Ambady, N., & Rosenthal, R. (1992). Thin slices of behavior as predictors of interpersonal consequences: A meta-analysis. *Psychological Bulletin, 111*, 256-274.

Bargh, J. A. (1992). The ecology of automaticity. Toward establishing the conditions needed to produce automatic processing effects. *American Journal of Psychology, 105*, 181-199.

Bargh, J. A. (1997). The automaticity of everyday life. In R. S. Wyer (Ed.), *Advances in social cognition* (Vol. 10, pp. 1-49). Mahwah, NJ: Erlbaum.

Bargh, J. A., & Barndollar, K. (1996). Automaticity in action: The unconscious as repository of chronic goals and motives. In P. M. Gollwitzer & J. A. Bargh, (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 457-481). New York: Guilford.

Bargh, J. A., Chaiken, S., Govender, R., & Pratto, F. (1992). The generality of the attitude activation effect. *Journal of Personality and Social Psychology, 62*, 893-912.

Bargh, J. A., Raymond, P., & Pryor, J. B. (1995). Attractiveness of the underling: An automatic power → sex association and its consequences for sexual harassment and aggression. *Journal of Personality and Social Psychology, 68*, 768-781.

Berkowitz, L. (1999). Anger. In T. Dalgleish & M. Power (Eds.), *Handbook of cognition and emotion* (pp. 411-428). New York: Wiley.

De Houwer, J, & Eelen, P. (1998). An affective variant of the Simon paradigm. *Cognition and Emotion, 12*, 45-61.

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229-238.

Frijda, N. H. (1986). *The emotions*. New York: Cambridge University Press.

Frijda, N. H., & Zeelenberg, M. (2001). What is the dependent? In K. R. Scherer, A. Schorr and T. Johnstone (Eds.), *Appraisal processes in emotion* (pp. 141-155). New York: Oxford University Press.

Hermans, D., Clarysse, J., Baeyens, F., & Spruyt, A. (2001). *Affect (Version 3.0) [Computer software; retrieved from http://www.psy.kuleuven.ac.be/leerpsy/affect]*. University of Leuven, Leuven, Belgium.

Hermans, D., De Houwer, J., & Eelen, P. (1994). The affective priming effect: Automatic activation of evaluative information in memory. *Cognition and Emotion, 8,* 515-533.

Lambie, J. A., & Marcel, A. J. (2002). Consciousness and the varieties of emotion experience: A theoretical framework. *Psychological Review, 109*, 219-259.

Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.

Lazarus, R. S. (2001). relational meaning and discrete emotions. In K. R. Scherer, A. Schorr & T. Johnstone, *Appraisal processes in emotion* (pp. 37-67). New York: Oxford University Press.

Moors, A. & De Houwer, J. (2001). Automatic appraisal of motivational valence: Motivational affective priming and Simon effects. *Cognition and Emotion, 15*, 749-766.

Moors, A., & De Houwer, J. (2004). Automaticity: A theoretical and conceptual analysis. Manuscript in preparation.

Moors, A., De Houwer, J., & Eelen, P. (2004). Automatic stimulus-goal comparisons: evidence from motivational affective priming studies. *Cognition and Emotion, 18,* 29-54..

Moors, A., De Houwer, J. Hermans, D. & Eelen, P. (in press). Unintentional processing of motivational valence. *Quarterly Journal of Experimental Psychology: A*.

Roseman, I. J. (1984). Cognitive determinants of emotions: A structural theory. In P. Shaver (Ed.), *Review of personality and social psychology* (Vol. 5, pp. 11-36). Beverly Hills, CA: Sage.

Roseman, I. J., Antoniou, A. A., & Jose, P. E. (1996). Appraisal determinants of emotions: Constructing a more accurate and comprehensive theory. *Cognition and Emotion, 10*, 241-277.

Scherer, K. R. (1988). Criteria for emotion-antecedent appraisal: A review. In V. Hamilton, G. H. Bower, & N. H. Frijda (Eds.), *Cognitive Perspectives on emotion and motivation* (pp. 89-126). Dordrecht, Netherlands: Kluwer Academic Publishers.

Tiedens, L. Z., Fragale, A. R. (2003). Power Moves: Complementarity in dominant and submissive nonverbal behavior. *Journal of Personality and Social Psychology, 84,* 558-568.

Voss, A., Rothermund, K., & Wentura, D. (2003). Estimating the valence of single stimuli: A new variant of the affective Simon task. *Experimental Psychology, 50*, 86-96.

Williams, J. M. G., Mathews, A. & MacLeod, C. (1996). The emotional Stroop task and psychopathology. *Psychological Bulletin, 120*, 3-24.

Footnotes

[1] Because our participants were Dutch, they actually responded with the Dutch words DOMINANT (dominant) and ONDERDANIG (submissive).

Table 1

Mean reaction times in ms and percentages of errors (SD in parentheses)as a function of the status of the target person and the nature of the to-be-given response

		Status of target person	
	Nature of to-be-given response	Dominant	Submissive
Reaction times	Dominant	864 (103)	894 (120)
	Submissive	918 (102)	866 (112)
Percentage of errors	Dominant	4.50 (7.17)	10.33 (8.93)
	Submissive	8.78 (10.89)	4.43 (5.45)

Appendix

Words for practice trials: dominant	*submissive*
zelfverzekerd (self-confident)	naïef (naive)
bikkelhard (rock-hard)	braaf (well-behaved)
brutaal (brutal)	onschuldig (innocent)
tiranniek (tyrannical)	bedeesd (diffident)
Words for experimental trials: dominant	*submissive*
bazig (bossy)	buigzaam (pliable)
autoritair (authoritarian)	onderdanig (submissive)
dominant (dominant)	afhankelijk (dependent)
heftig (fierce)	volgzaam (obedient)
ambitieus (ambitious)	verlegen (shy)
vastberaden (tenacious)	onzeker (uncertain)
geestdriftig (passionate)	slap (weak)
aanvallend (attacking)	nederig (humble)

Description of photographs for practice trials

Scene 1: One person dressed in a suit reprimands a cleaner holding a brume.

Scene 2: Two men are fighting and one person is ready to hit the other person.

Scene 3: Two men are fighting on the ground, one person is holding down the other person.

Description of photographs for experimental trials

Scene 1: An army officer is shouting at a soldier who looks tense.

Scene 2: An army officer holds a gun against the head of a soldier who is kneeling down.

Scene 3: A soldier points a gun at another soldier who is lying on the ground.

Scene 4: A football player is being shown the red card by a referee.

Scene 5: A policeman points a gun at a thief who is holding his hands up.

Scene 6: A policeman is body-searching a man who is standing against a car with his hands placed on the car.

Scene 7: A policeman stands beside a car while looking suspiciously through the identification papers of the driver. The driver sits in his car and looks worried.

Scene 8: An employer stands behind his desk and shouts at an employee while raising his finger. The employee bends his head and looks dismayed.